

relief to the abdominal distension and the facial expression improved wonderfully. The temperature rapidly dropped to 100°, the pulse became less frequent, regular and stronger, the tongue became moistened, the delirium disappeared, and much flatus began to be passed from the anus. On Oct. 9th the abdomen was quite flaccid and the bowels acted six times, the patient sleeping well. The temperature was 98° and the pulse was 72. On the 14th the tympanites was beginning again, but the albumin had disappeared from the urine. There were fresh spots and a troublesome cough from bronchitis. On the 16th the hæmorrhage from the bowels weighed 4 oz. On the 17th the patient became suddenly cold and collapsed. Internal hæmorrhage was diagnosed. On the 24th there was a fresh crop of spots with a return of fever. A few more interesting features may be related. On the 30th at 4 P.M. a marked rigor occurred immediately after a glycerine enema. On Nov. 1st a fresh rigor was experienced in the early morning for which there was no obvious cause. There was no malarial history and no sign of suppuration or inflammation. On the 2nd there was a rigor in the afternoon immediately after the bowels had been moved naturally. The patient was now put on quinine in large doses, which had previously been taken without benefit, and the temperature at once became subnormal and remained so until he left the hospital, but for several days after the last rigor he vomited after each movement of the bowels. He left the hospital looking remarkably well, but whilst at the seaside in December he was attacked with phlebitis and thrombosis of both femoral veins. He was, however, quite well on Jan. 15th, 1897, and had resumed work.

The case was a very severe one from the first. The patient was most carefully fed and well nursed throughout and the severity of the symptoms and the number of complications and the relapse were apparently entirely due to the severity of the poison of the disease. The patient's temperature from Sept. 30th to Oct. 8th averaged about 102°; on Oct. 9th, 10th, and 11th it was normal; from Oct. 12th to the 21st it averaged about 101°; on Oct. 22nd it was normal; from Oct. 23rd to the 27th it averaged about 101°; on Oct. 28th and 29th it was normal; from Oct. 30th to Nov. 2nd it averaged about 101°; on the evening of Nov. 2nd it was 104.4°; on the morning of Nov. 3rd it was 97.0°; and, as already mentioned, it remained subnormal during the remainder of his stay in hospital.

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VACCINATION AND VACCINATION MARKS.

BY JOHN LOWE, M.D. EDIN.

THE vaccination question has long been drifting into an apparently hopeless tangle, and now that a "conscience clause" has been passed in the new Vaccination Act without any machinery being provided for better informing the public, but leaving it to the teaching of the opponents of vaccination, the position becomes still more perplexing and will, it is to be feared, proceed from bad to worse. It is not cheering for two-thirds of the people of this country to find in their midst a one-third minority of unvaccinated people who assume the right of controlling all legislation and who, being themselves open to the ravages of small-pox, feel no compunction at the idea of spreading it broadcast among their neighbours. That they had some grounds in time past for their objections to vaccination is admissible, and indeed this was freely admitted by the Royal Commission on Vaccination. Henceforth it will be more prudent not to quarrel with the views of these objectors, but to "trim our sails and let old bygones be," and to use every means to meet their objections and prejudices. This can be done only in two ways: firstly, by rendering the operation absolutely harmless and painless, so that no possible exception can be taken to its performance, and, secondly, by fully educating the public in the knowledge of the freedom from pain and risk which it secures and of the enormous benefits which follow from it.

The use of calf-lymph has largely diminished the risks of vaccination and the possible objections to it, but it cannot be denied that much remains to be done before the operation is a perfect one. Lord Lister's suggestion in the House of

Lords that the time is not far distant when a completely antiseptic mode of vaccination will be attained commends itself as a valid and wise reason for delaying compulsory legislation until this period arrives. Dr. Copeman's glycerinated vaccine is an important advance in this direction, but, as has been pointed out, it is still on its trial and admittedly does not fulfil Lord Lister's desideratum of a perfectly antiseptic operation. Although the sequelæ have been greatly modified by it, its incompleteness is shown by its leaving the vaccination marks or cicatrices which are, for some inscrutable reason, regarded by the Local Government Board as the essential proof of success. The marks are, however, I think, a palpable proof that the operation has been non-antiseptic. They show that the pustular or suppurative stage has been reached and that the febrile state has been intensified and general irritation set up in the system by the absorption of septic poison from the pustules.

Hence the question arises, Is this suppuration and its attendant blood-poisoning a necessary part of vaccination? To this question I should reply with an emphatic negative, although I am bound to admit that, for a reason to which I shall advert presently, there is no absolute evidence on the subject. The insertion of vaccine lymph into the system produces certain changes of which the outcome is the vaccine vesicle. When this is fully formed and filled with colourless liquid the process is, I take it, complete, and it is difficult to believe that the subsequent change of this fluid into pus and the absorption of septic matter can add anything to the protective influence of the vaccine. That any chemical substance added to the vaccine lymph can make the whole process of vaccination antiseptic is doubtful, and it does not appear how under ordinary conditions, when a vesicle has fully formed, it should fail to go on to the formation of pus, except by direct antiseptic measures applied to the vesicle itself. For more than twenty-five years I have always used a plan of this kind. By means of a fine camel-hair brush a solution of pure carbolic acid is applied to the vesicle on the seventh or eighth day, the surrounding skin having been previously oiled with salad oil. A few seconds after the application tepid water is poured over the spot and a piece of antiseptic wadding is applied and strapped on lightly. The scab separates without a trace of suppuration and therefore without leaving the faintest cicatrix. Long ago I published this plan, but was met with the unanswerable argument, from the public vaccinator's point of view—"Without the cicatrix there will be no grant." Then there was the obvious suggestion that the protective influence of the vaccine may have been diminished by the treatment. I do not believe this. One might as well contend that small-pox treated as it has been by me in the same way was no longer small-pox, but some milder and less protective malady. It is, however, a question requiring examination and full investigation, and the time has come for this to be done, as I have long been sure it must come.

Some years ago, in speaking to a prominent member of the Royal Commission on Vaccination on the subject, he suggested that I should make these investigations, which in a certain degree are experimental though perfectly harmless, requiring only a revaccination after a stated period. I have made endeavours to carry them out with the result that the authorities refuse "to allow any experiment to be made in a public institution." One cannot quarrel with this decision, but it seems a pity that so simple a thing cannot be done, and one is disposed to wonder how Dr. Copeman's great improvement or Lord Lister's suggestion could be carried out without an equal amount of experiment.

The Local Government Board's insistence on the importance of the cicatrix is, I think, illogical. The work of the inspector consists mainly of examining these marks in a certain number of cases taken at haphazard from the public vaccinators' books, and on these the money grants for excellent results are founded. But it would certainly be as easy and much more satisfactory—supposing the antiseptic process to be adopted—for the inspector to pay a surprise visit on a vaccination day. He would then see not only how the cases which had been vaccinated during the previous week had succeeded, but also how the antiseptic provision on the eighth day was carried out. Surely, this would be a more satisfactory inspection than a glance at a scar and one which would give a much better idea of the character of the work done.

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